

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

1. (Currently amended) A method of establishing a proteomic protein-protein interaction map comprising

(a) screening for a proteomic protein-protein interaction between at least one protein and a plurality of proteins, where the screening is performed in the absence of a simulated redox state perturbation, and where the plurality of proteins are screened concurrently;

(b) screening for a proteomic protein-protein interaction between the at least one protein and a plurality of proteins, where the screening is performed in the presence of a simulated redox perturbation, and where the plurality of proteins are screened concurrently; and

(c) generating the proteomic protein-protein interaction map by identifying at least one different proteomic protein-protein interaction between (a) and (b).

2. (Previously presented) The method of Claim 1, wherein the simulated redox state perturbation is generated by a process selected from the group consisting of: variation of concentration of redox state modifier molecules from physiological state, variation of glucose concentration from physiological state, presence of metal ions, alteration in NADH ratio, and oxygen concentrations less than room air.

3. (Previously presented) The method of Claim 1, wherein the simulated redox state perturbation is generated by addition of a redox state modifier molecule selected from the group consisting of superoxide, peroxides, hydrogen peroxide, alkoxides, sulfoxides, brominating species, chlorinating species, nitrosating molecules, nitric oxide, S-nitrosothiols, nitrating molecules, peroxynitrite, NO⁻ generating molecules, glutathione-regulating enzymes, NADH-regulating enzymes, and flavin-regulating enzymes.

4. (Cancelled)
5. (Currently amended) A method of correlating ~~proteomic~~ protein-protein interaction(s) with oxygen tension comprising
 - (a) screening for a ~~proteomic~~ protein-protein interaction between at least one protein and a plurality of proteins, where the screening is performed in room air, and where the plurality of proteins are screened concurrently;
 - (b) screening for a ~~proteomic~~ protein-protein interaction between the at least one protein and a plurality of proteins, where the screening is performed in the presence of decreased oxygen tension, and where the plurality of proteins are screened concurrently; and
 - (c) correlating the ~~proteomic~~ protein-protein interaction(s) with oxygen tension by identifying at least one different ~~proteomic~~ protein-protein interaction between (a) and (b).
6. (Previously presented) The method of Claim 5 where at least one protein employed in the determination is associated with a physiological process or a pathophysiological process.
7. (Previously presented) The method of Claim 5 where a plurality of determinations are made in step (b) with different oxygen tensions being employed in each determination.
8. (Previously presented) The method of Claim 7 where the oxygen tensions employed are in step (b) range from 0.1 mm Hg to 145 mm Hg.
9. (Previously presented) The method of Claim 5 where the different interactions in step (c) are used to identify protein functions associated with a pathophysiological process.
10. (Cancelled)
11. (Withdrawn) A method of identifying previously unknown receptor or orphan receptor or activating ligand therefor comprising the step of measuring activation of receptor or orphan receptor in the presence of alteration of redox state.

12. (Withdrawn) A method of determining epitopes involved in and/or representing marker of disease comprising immunolabeling affected tissue or cells under redox conditions that are characteristic of the disease.

13. (New) A method of correlating protein levels(s) with oxygen tension comprising

(a) screening for protein levels of a plurality of proteins, where the screening is performed in room air, and where the plurality of proteins are screened concurrently;

(b) screening for protein levels of a plurality of proteins, where the screening is performed in the presence of decreased oxygen tension, and where the plurality of proteins are screened concurrently; and

(c) correlating the protein level(s) with oxygen tension by identifying at least one different protein level between (a) and (b).

14. (New) The method of Claim 13 where at least one protein employed in the determination is associated with a physiological process or a pathophysiological process.

15. (New) The method of Claim 13 where a plurality of determinations are made in step (b) with different oxygen tensions being employed in each determination.

16. (New) The method of Claim 15 where the oxygen tensions employed are in step (b) range from 0.1 mm Hg to 145 mm Hg.

17. (New) The method of Claim 13 where the different protein levels in step (c) are used to identify protein functions associated with a pathophysiological process.